

4. Microservices using the Messaging queue

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Github: https://github.com/khristinakokolus/microservices_architecture.git

All code is in the *micro_mq* branch.

Sending 10 POST requests with 10 messages.

Facade service console:

```
2022-05-14 08:10:42 INFO      * Running on http://127.0.0.1:8080/ (Press CTRL+C to quit)
2022-05-14 08:11:01 INFO      127.0.0.1 - - [14/May/2022 08:11:01] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:02 INFO      127.0.0.1 - - [14/May/2022 08:11:02] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:03 INFO      127.0.0.1 - - [14/May/2022 08:11:03] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:04 INFO      127.0.0.1 - - [14/May/2022 08:11:04] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:05 INFO      127.0.0.1 - - [14/May/2022 08:11:05] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:06 INFO      127.0.0.1 - - [14/May/2022 08:11:06] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:07 INFO      127.0.0.1 - - [14/May/2022 08:11:07] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:08 INFO      127.0.0.1 - - [14/May/2022 08:11:08] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:10 INFO      127.0.0.1 - - [14/May/2022 08:11:10] "POST /facade_service HTTP/1.1" 200 -
2022-05-14 08:11:11 INFO      127.0.0.1 - - [14/May/2022 08:11:11] "POST /facade_service HTTP/1.1" 200 -
```

Launched 3 logging services.

First logging service console:

```
2022-05-14 08:10:53 INFO      * Running on http://127.0.0.1:8083/ (Press CTRL+C to quit)
2022-05-14 08:11:05 INFO      {'message': 'msg5', 'message_uuid': '0abff5fa-ddcd-4b53-8c60-12417fb1db7f'}
2022-05-14 08:11:05 INFO      127.0.0.1 - - [14/May/2022 08:11:05] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:06 INFO      {'message': 'msg6', 'message_uuid': '9a46340b-4349-4dc8-87f6-bb1500fa80fa'}
2022-05-14 08:11:06 INFO      127.0.0.1 - - [14/May/2022 08:11:06] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:10 INFO      {'message': 'msg9', 'message_uuid': '32ef61c2-bd15-4c8e-a7ea-13a8f064b838'}
2022-05-14 08:11:10 INFO      127.0.0.1 - - [14/May/2022 08:11:10] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:11 INFO      {'message': 'msg10', 'message_uuid': '54694d00-4631-44e8-a4d7-14034831f13b'}
2022-05-14 08:11:11 INFO      127.0.0.1 - - [14/May/2022 08:11:11] "POST /logging_service HTTP/1.1" 200 -
```

Second logging service console:

```
2022-05-14 08:10:51 INFO      * Running on http://127.0.0.1:8084/ (Press CTRL+C to quit)
2022-05-14 08:11:04 INFO      {'message': 'msg4', 'message_uuid': '5c4df35e-c8ac-4c8b-8185-c97fe47b08d4'}
2022-05-14 08:11:04 INFO      127.0.0.1 - - [14/May/2022 08:11:04] "POST /logging_service HTTP/1.1" 200 -
```

Third logging service console:

```
2022-05-14 08:10:48 INFO      * Running on http://127.0.0.1:8085/ (Press CTRL+C to quit)
2022-05-14 08:11:01 INFO      {'message': 'msg1', 'message_uuid': '1d48304f-97bc-4027-b738-732d922ec32e'}
2022-05-14 08:11:01 INFO      127.0.0.1 - - [14/May/2022 08:11:01] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:02 INFO      {'message': 'msg2', 'message_uuid': 'e147111e-47bd-4099-901d-9aa73f751ee4'}
2022-05-14 08:11:02 INFO      127.0.0.1 - - [14/May/2022 08:11:02] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:03 INFO      {'message': 'msg3', 'message_uuid': '52ca5187-ddcd-49ba-a761-e5c3d40d978f'}
2022-05-14 08:11:03 INFO      127.0.0.1 - - [14/May/2022 08:11:03] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:07 INFO      {'message': 'msg7', 'message_uuid': '5ef4c8eb-260c-4f5d-8755-5674b3758907'}
2022-05-14 08:11:07 INFO      127.0.0.1 - - [14/May/2022 08:11:07] "POST /logging_service HTTP/1.1" 200 -
2022-05-14 08:11:08 INFO      {'message': 'msg8', 'message_uuid': '72967b93-8e15-4b0b-90d6-3833306b016a'}
2022-05-14 08:11:08 INFO      127.0.0.1 - - [14/May/2022 08:11:08] "POST /logging_service HTTP/1.1" 200 -
```

From here it can be seen that messages are randomly distributed among the logging service instances.

Launched 2 messages services.

First messages service console:

```
2022-05-14 08:10:46 INFO      * Running on http://127.0.0.1:8081/ (Press CTRL+C to quit)
2022-05-14 08:11:03 INFO      {'message': 'msg3', 'message_uuid': '52ca5187-ddcd-49ba-a761-e5c3d40d978f'}
2022-05-14 08:11:03 INFO      127.0.0.1 - - [14/May/2022 08:11:03] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:04 INFO      {'message': 'msg4', 'message_uuid': '5c4df35e-c8ac-4c8b-8185-c97fe47b08d4'}
2022-05-14 08:11:04 INFO      127.0.0.1 - - [14/May/2022 08:11:04] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:11 INFO      {'message': 'msg10', 'message_uuid': '54694d00-4631-44e8-a4d7-14034831f13b'}
2022-05-14 08:11:11 INFO      127.0.0.1 - - [14/May/2022 08:11:11] "POST /message_service HTTP/1.1" 200 -
```

Second messages service console:

```
2022-05-14 08:10:44 INFO      * Running on http://127.0.0.1:8082/ (Press CTRL+C to quit)
2022-05-14 08:11:01 INFO      {'message': 'msg1', 'message_uuid': '1d48304f-97bc-4027-b738-732d922ec32e'}
2022-05-14 08:11:01 INFO      127.0.0.1 - - [14/May/2022 08:11:01] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:02 INFO      {'message': 'msg2', 'message_uuid': 'e147111e-47bd-4099-901d-9aa73f751ee4'}
2022-05-14 08:11:02 INFO      127.0.0.1 - - [14/May/2022 08:11:02] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:05 INFO      {'message': 'msg5', 'message_uuid': '0abff5fa-ddcd-4b53-8c60-12417fb1db7f'}
2022-05-14 08:11:05 INFO      127.0.0.1 - - [14/May/2022 08:11:05] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:06 INFO      {'message': 'msg6', 'message_uuid': '9a46340b-4349-4dc8-87f6-bb1500fa80fa'}
2022-05-14 08:11:06 INFO      127.0.0.1 - - [14/May/2022 08:11:06] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:07 INFO      {'message': 'msg7', 'message_uuid': '5ef4c8eb-260c-4f5d-8755-5674b3758907'}
2022-05-14 08:11:07 INFO      127.0.0.1 - - [14/May/2022 08:11:07] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:08 INFO      {'message': 'msg8', 'message_uuid': '72967b93-8e15-4b0b-90d6-3833306b016a'}
2022-05-14 08:11:08 INFO      127.0.0.1 - - [14/May/2022 08:11:08] "POST /message_service HTTP/1.1" 200 -
2022-05-14 08:11:10 INFO      {'message': 'msg9', 'message_uuid': '32ef61c2-bd15-4c8e-a7ea-13a8f064b838'}
2022-05-14 08:11:10 INFO      127.0.0.1 - - [14/May/2022 08:11:10] "POST /message_service HTTP/1.1" 200 -
```

From here it can be seen that messages are randomly distributed among the messages service instances.

GET request output:

```
HTTP/1.0 200 OK
Content-Type: text/html; charset=utf-8
Content-Length: 176
Server: Werkzeug/2.0.2 Python/3.9.7
Date: Sat, 14 May 2022 05:12:56 GMT

Logging service messages: [msg6, msg4, msg8, msg2, msg7, msg10, msg9, msg1, msg3, msg5]
Messages service messages: [msg1, msg2, msg3, msg4, msg5, msg6, msg7, msg8, msg9, msg10]
Response file saved.
> 2022-05-14T081257.200.html

Response code: 200 (OK); Time: 1046ms; Content length: 176 bytes
```

Facade service GET request:

```
2022-05-14 08:12:56 INFO      Logging service: http://localhost:8083/logging\_service
2022-05-14 08:12:56 INFO      Message service: http://localhost:8081/message\_service
2022-05-14 08:12:56 INFO      127.0.0.1 - - [14/May/2022 08:12:56] "GET /facade_service HTTP/1.1" 200 -
```

Logging service GET request:

```
2022-05-14 08:12:56 INFO      127.0.0.1 - - [14/May/2022 08:12:56] "GET /logging_service HTTP/1.1" 200 -
```

Messages service GET request:

```
2022-05-14 08:12:56 INFO      127.0.0.1 - - [14/May/2022 08:12:56] "GET /message_service HTTP/1.1" 200 -
```